

## PATENT COOPERATION TREATY

## PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 23 MAY 2005

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Applicant's or agent's file reference FF-2004-PCT-004	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. <b>PCT/KR2004/000068</b>	International filing date(day/month/year) <b>16 JANUARY 2004 (16.01.2004)</b>	Priority date (day/month/year) 23 JANUARY 2003 (23.01.2003)
International Patent Classification (IPC) or national classification and IPC <b>IPC7 C08F 10/02</b>		
Applicant <b>SAMSUNG ATOFINA CO. LTD. et al</b>		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 4 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of \_\_\_\_\_ sheets, as follows:

☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) \_\_\_\_\_ containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

☒ Box No. I Basis of the report

☐ Box No. II Priority

☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability



☐ Box No. IV Lack of unity of invention

☒ Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

☐ Box No. VI Certain documents cited

☐ Box No. VII Certain defects in the international application

☐ Box No. VIII Certain observations on the international application

Date of submission of the demand <b>20 AUGUST 2004 (20.08.2004)</b>	Date of completion of this report 12 MAY 2005 (12.05.2005)
Name and mailing address of the IPEA/KR  Korean Intellectual Property Office 920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea Facsimile No. 82-42-472-7140	Authorized officer BAHN, Yong Byung Telephone No. 82-42-481-5539 

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/KR2004/000068

## Box No. I Basis of the report

1. With regard to the **language**, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

- ☒ This report is based on translations from the original language into the following language English which is the language of a translation furnished for the purposes of:
- ☐ international search (under Rules 12.3 and 23.1(b))
- ☒ publication of the international application (under Rule 12.4)
- ☐ international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the **elements** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:

- ☒ the international application as originally filed/furnished
- ☐ the description:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the claims:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the drawings:  
 pages \_\_\_\_\_ as originally filed/furnished  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_  
 pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_
- ☐ the sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.

3. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets \_\_\_\_\_
- ☐ the sequence listing (*specify*): \_\_\_\_\_
- ☐ any table(s) related to sequence listing (*specify*): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

# INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

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## Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

### 1. Statement

Novelty (N)	Claims	1-8	YES
	Claims	NONE	NO
Inventive step (IS)	Claims	NONE	YES
	Claims	1-8	NO
Industrial applicability (IA)	Claims	1-8	YES
	Claims	NONE	NO

### 2. Citations and explanations (Rule 70.7)

Reference is made to the following document:

D1: KR 2001-53663 A (Samsung General Chemicals. Co., Ltd)

#### 1. Novelty

The present invention is different from D1, which is the closest prior art, in the process of obtaining a solid titanium catalyst among catalyst ingredients. Therefore, claims 1-8 meet the requirement of PCT Article 33(2).

#### 2. Inventive Step

The present invention relates to a method of polymerization or copolymerization of ethylene using a solid titanium catalyst obtained by treating a solid titanium catalyst component supported on a magnesium-containing carrier with haloalkane or with a mixture of an aluminum compound and haloalkane.

D1 discloses a solid titanium catalyst for ethylene (co)polymerization and a process for producing the same, comprising the steps of: i) contact-reacting a magnesium halide compound and an alcohol to prepare a magnesium solution; ii) reacting the magnesium solution and an ester compound containing at least one hydroxy group or a phosphorous compound with a silicon compound having an alkoxy group; iii) adding a mixture of a titanium compound and a silicon compound to prepare a solid component; and iv) reacting the solid component with an aluminum compound and then reacting the resultant with the titanium compound or the titanium compound and a vanadium compound.

(Continued on Supplemental Box.)

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Supplemental Box

In case the space in any of the preceding boxes is not sufficient.  
Continuation of:

Box No. V.

Comparing the present invention with the invention of D1, there is no particular difference between their technical features of producing a catalyst: the present invention prepares a solid titanium catalyst by reacting a mixture of a titanium compound and a haloalkane compound, while D1 prepares a solid titanium catalyst by adding a mixture of a titanium compound and a silicon. A person skilled in the art can easily invent the present invention by simply modifying the disclosure of D1. Therefore, claims 1-8 do not meet the requirement of PCT Article 33(3).

3. Industrial Applicability

Claims 1-8 meet the criteria of PCT Article 33(4), because the invention can be used in industry.